ATOMIC ENERGY newsletter
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Dear Sir:

President Truman disclosed in Washington last week that an "atomic explosion" had occurred recently in the Soviet Union; simultaneously, London and Ottawa announced this momentous event.

Of an importance equal to the first U.S. nuclear explosion, in July, 1945, the announcement signifies world-wide repercussions. Upset is the U. S. 1952 prediction, and the British 1956 estimate, as the earliest dates possible for such a development; upset, too, are all military calculations which had used such a timetable. However, these predictions assumed Russian science was not active, in nuclear research, until the U.S.'s 1945 A-bomb detonations revealed this country's work. Actually, great interest was shown by physicists everywhere when, in January, 1939, the fission of uranium was discovered. Accordingly, there is every reason to believe that Soviet scientists, too, recognized the vast potentialities for war and peace that this 1939 discovery portended. The recent explosion may thus be termed the "result" of 10 years of concentration on the problem.

As to how the explosion was detected, seismographs in Japan, India, Turkey and Denmark would register an earth disturbance in the Soviet Union, and place it. Geiger counters, too, may have been used to measure the increase in atmospheric radioactivity that would occur from the radioactive cloud formed after an atomic bomb explosion.

Concerning the significance of the event, Dr. Harold C. Urey, of the Emergency Committee of Atomic Scientists, said in Chicago that international control of atomic energy is the only way to make certain that this force will be used for the benefit of mankind. He emphasized that scientific progress, important as it is for the U.S.'s national security, cannot insure world peace.

In Washington, Representative Albert Thomas, of the House Appropriations sub-committee asked the U.S. Atomic Energy Commission whether the atomic program should be stepped-up, and what it would cost. (Present AEC operating budget had been cut $77 million. See: AEN 8/2/49.) Senator McMahon, chairman, Joint Congressional Committee on Atomic Energy, is also expected at a forthcoming Committee meeting to inquire into increasing facilities and production potential by the AEC.

President Truman's announcement came as representatives of the U.S., Britain, and Canada, under the general direction of the Combined Policy Committee, were discussing in Washington the specific areas in which the three nations can enlarge the present exchange of atomic information, and a possible revision of the allocation of available radioactive minerals. The talks had their outgrowth in the secret Blair House meetings of President Truman with the U.S.'s key policy makers (AEN 7/19/49). Conferences will also be held by the 3-nations in London this week, under this Committee, in which exploration techniques and analytical and extraction methods relating to radioactive ores will be discussed.

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AT THE ATOMIC CITIES OF THE UNITED STATES...

OAK RIDGE, Tenn.- More than $700,000.00 in sales and use taxes are at issue in suits filed in Federal Court in Nashville recently testing the authority of Tennessee to collect the tax on materials used by independent contractors working at Oak Ridge for the Atomic Energy Commission. The state claims that a U.S. Supreme Court decision permits states to collect sales tax on materials used by contractors working on a cost-plus fixed fee basis, as at Oak Ridge. Attorneys for the contractors argued that a section of the Atomic Energy Act of 1946 exempts such materials. Carbide & Carbon Chemicals Corp. are involved in the use tax issue, while Wilson, Weesner, & Wilkinson Co. and Diamond Coal Mining Co., are concerned with the sales tax.

Settlement of 2½-month old labor dispute, involving some 800 hourly craft workers of Oak Ridge National Laboratory, and Carbide & Carbon Chemicals Co., has now been resolved on the basis of a proposal by the President's Atomic Energy Labor Relations Panel. Main gain for workers, represented at Panel hearings by Atomic Trades and Labor Council (AFL), were pay boosts.

After 2-months as assistant manager at Oak Ridge, for the AEC, Richard W. Cook was recently appointed manager, succeeding J. C. Franklin, resigned this past June. Cook will administer all AEC contracts covering operation of Oak Ridge's gaseous diffusion uranium-235 production unit (K-25), the Y-12 electromagnetic separation plant, and the community here. He also handles the contracts for the Dayton, Ohio, area, which includes the Mound Laboratory, at Miamisburg, Ohio, and the newly constructed unit VI at Marion, Ohio.

Bids have been asked, under invitation no. 50-9, for improvements to roads, walks, etc., in the TDU,T and U areas here; Roane-Anderson Co., of P.O. Box 456, Oak Ridge, are handling the bid letting. Due date: October 19th.

LOS ALAMOS, New Mexico- Indicating the extent of new construction here are figures recently obtained showing that lump-sum contractors, at Los Alamos are now receiving over $5,500,000.00 monthly in both payroll and other payments from the AEC. Additional government payments of $2,300.000.00 monthly by the AEC for its employees here, swell the total disbursements. At the end of June, there was a permanent Los Alamos population of 8,650; of this, 7,897 were employed here.

The AEC has asked bids for construction of a steam power plant here for electric and steam supply, including construction of a main building of approximately 1 million cu. ft., installation of two 5,000 KW turbo-generators, installation of fans, pumps, etc. Major equipment will be furnished by the Government. Estimated cost: $750,000.00 to $1,250,000.00; award will be made as a whole to one contractor. Invitation is no. 291-50-20, with bid call date as yet unannounced.

At Sandia Base, atomic bomb engineering and assembly facility at nearby Albuquerque, courses in military phases of atomic energy will be given by the Armed Force Special Weapons Project to top General officers of the U.S. military commands. Army, Navy and Air Force specialists in atomic energy will be instructors...For a central heating plant for this base, the U.S. Corps of Engineers, P.O. Box 1538, Albuquerque, have asked bids under serial no. 291-50-07; due date is about October 21st...With a bid of $1,357,000.00, Robert E. McKee Co., of Santa Fe, led 11 bidders for a 150-bed hospital at Sandia; Utah-Leavell Co., of El Paso, were next higher, at $1,368,404.00.

ARCO, Idaho- Survey parties are now at work at this site of the new Reactor Testing Station, under E. B. Steele, engineer, of Arco. This Fall, a concrete batch plant will be erected here. The concrete plant, which is Government-owned, is to be transferred from the Hanford Plutonium Works, in Richland, Wash. Contract for the dismantling and erecting job was awarded Puget Sound Macco, a joint venture composed of the Puget Sound Bridge and Dredging Co., of Seattle, Wash., and the Macco Construction Co., of Paramount, Calif.

NUCLEAR INSTRUMENTS...

NEW PRODUCTS- Portable beta-gamma monitoring instrument, model 2610-A. For monitoring radioisotopes and X-rays; geological and industrial surveys; for personnel protection. Lighter in weight than previous model 2610; probe snaps into handle. Earphones and meter; metal loops permit use of shoulder strap. --Nuclear Instrument & Chemical Corp., Chicago, Ill.

RCL flow Geiger-Muller counter. Permanent self-quenching detector for alpha, beta and gamma radiation. May be used directly with usual commercially available scaling circuits since it operates at approximately 1,550 volts. The gas filling, supplied from cylinder, is flowed slowly through counter during operation--Radiation Counter Laboratories, Chicago, Ill.

Equipment for industrial radiography by radium, radon, and radioactive cobalt-60 (of high specific activity) when it becomes available (AEN 6/21/49). Basic unit is a portable carrier, constructed of copper-tungsten alloy, so as to provide adequate screenage for sources up to 250 millicuries. Beam may be directed accurately and safely with aid of periscopic device.--Johnson, Matthey & Co., Ltd., London (England).

NEW APPLICATIONS- A Geiger counter used by the U.S. Steel Corp. in their research laboratories, in connection with a direct reading spectrograph, is enabling faster and more accurate metallurgical analyses than by other methods, Dr. James B. Austin, USS's director of research reports. Dr. Austin said the new method is best adapted for elements of "middle" atomic weight, among which are elements most often combined with iron and carbon forming the various steels in common use--chromium, manganese, nickel, and copper; also tungsten, vanadium and titanium. According to Dr. Austin, when the Geiger counter-spectrograph combination is brought into steel operations, its utility will be still greater, since the operator of a steel making furnace must know, at various stages of the heating cycle, the exact composition of the melt; it is believed the combination will help resolve this problem.

ATOMIC PATENT DIGEST...

Fast neutron meter, for measuring neutron intensity in the presence of gamma radiation. Comprises a rod electrode, and two chambers arranged concentrically about the electrode. While both of the chambers are equally responsive to gamma radiation, only one is responsive to neutron bombardment. U. S. Pat. No. 2,481,506, issued Sept. 13th, 1949, to Carl C. Gamertsfelder, Oak Ridge, Tenn., and assigned to the United States of America (USAEC).

Neutron detector of large surface and small volume. Specifications open to public inspection before acceptance, by British Patent Office. Reference, 6210/45. Inventor, O. R. Frisch.

PARTICLE ACCELERATORS...

Working with the high-energy roentgen radiation, as applied for medical therapy, from the 22 Mev betatron at the University of Saskatchewan, Canada, five investigators from the Physics Department there have produced fields of radiation of different sizes and found how the depth dose depends on the area and focal skin distance. Their procedure was to collimate the roentgen-ray beam, and reduce the intensity in the center of the beam with a copper compensating filter so that they obtained a beam of uniform intensity over its cross section. By using tapered lead plugs, they obtained a variety of different sized radiation fields. Their depth dose data were obtained in a water phantom, using a small ionization chamber. Isodose distributions for circular fields of 4,6,8, and 10 cm. diameters at 70 cm. focal skin distance, and 6,9,12, and 15 cm. diameters at 105 cm., were obtained by making measurements of the radiation intensity at lattice points 1 cm. apart in a plane through the axis of the beam. The investigators believe that these distributions will prove of value in formulating therapy treatment using the betatron.

RADIOISOTOPES...applications and notes...

In an effort to determine whether the urinary excretion of radioactive iodine, orally administered, can be used for routine diagnostic tests in patients with thyroid disease, work was undertaken at the London (England) Hospital. (Radioactivity in urine can be determined with very low doses of tracer iodine; the method also involves less apparatus and laboratory space than does direct thyroid counting, and avoids any disturbance of the patient.) After a standard dose of about 10 microcuries of iodine-131 was given by mouth, a comparison of the 24-hour excretion of the I-131 in the urine was made. It was found that a 6-24 hour excretion of under 4% indicated definite thyroid overactivity; excretion of 10-25% occurred in normal persons; and over 25% was typical of myxoedema. The method was also found satisfactory in cases of doubtful thyrotoxicosis.

Studies have been made at the College of Medicine, of the University of Cincinnati, Ohio, of the distribution of radioactive iodine in rats with and without Walker tumor 256, after injection of radioactive sodium iodide. Objectives were to learn at what stage of tumor growth the effect of cancer on the uptake of iodine by the thyroid gland first appears, and whether the distribution of iodine among other tissues is also affected. Among some of the findings were that the majority of rats with implants of Walker tumor 256 had lower concentrations of the injected iodine in their thyroid glands, and other tissues, than did control rats grouped with them according to size and treated similarly. The concentrations of injected iodine in the tissues, at one-half hour after injection, changed during the 11-day period in which the animals were killed. The concentrations in the thyroids increased, and the concentrations in other tissues decreased.

The "Medical Aspects of Radioactive Isotopes and Atomic Weapons", is a course of instruction being offered at the Naval Medical School, National Naval Medical Center, Bethesda, Md., for inactive reserve medical officers. For the course beginning this November 10th, and continuing through November 19th, inactive reserve medical officers who wish to attend should submit requests to the Commandant of their Naval District prior to October 15th.

RADIATION...investigations...

The chemical composition of irradiated bone marrow has been the subject of studies at the Toledo Hospital Institute of Medical Research, Toledo, Ohio. In the work, rabbits over 4-months old were anesthetized with nembutal, and the desired area irradiated with 5,000 r. of unfiltered X-rays, delivered in a field of 380 sq. cm., at the rate of 160 r. per minute. The irradiated animals were then killed at intervals of 1 to 32 days. In most cases, the right foreleg was irradiated, while the rest of the body was covered by 1.5 mm. of lead. In these animals, the left foreleg was used as the control, to measure changes taking place in the irradiated limb, with the marrow of the hind legs used to determine the effects of sampling. Results showed the irradiated marrow to have an increase in lipide content, and decrease in water, residue (lipide-free solids), non-protein sulphur fractions, and total lipide, and non-protein nitrogen. Greatest changes in composition were in marrow normally most active, while a relatively greater amount of water was associated with the residue of the irradiated marrow.

Findings of the survey made this summer by University of Washington researchers, at the lagoon at Bikini, the Pacific atoll that was subjected to radioactive bombardment in the 1946 atomic bomb tests, are that radioactivity is still present there in measurable amounts. While no danger from radiation from external sources exists, except 200 feet below the surface, at the spot where the bomb was set off in the water, plant and animal life showed traces of radioactivity. In some animal and plant life there has been an increase, since the fish here build up radio-activity by feeding on lower forms of plant life that are contaminated.

RADIOACTIVE ORES...discoveries and workings...

UNITED STATES...Salmon, Idaho- A report of a garnet sand, rich in radioactive material, has been made by Fred Hinds, of Idaho Falls. Hinds said the deposit lies 46 miles down the Salmon river, in Idaho's primitive region, and that the bed covers an area estimated at 5-miles wide by 6-miles long; further, that test holes uncovered the sand to a depth of 10-feet. Both thorium and uranium minerals were reportedly present.

Denver, Colo.- The Atomic Energy Commission, and the Bureau of Mines, are mapping the U.S.'s monazite deposits with a view to their possible yield of thorium, the Commission has reported. Chief deposits are believed to lie in the former gold fields of California and Idaho, since monazite is usually found in sands that correspond with the placer gold beds.

CANADA- Uranium-bearing fractures are present in two known structures on the Canagau Mines property, according to Franc Joubin, geologist. Property consists of nine claims, one and one-half miles east of the shore of Lake Superior, and 85 miles north of Sault Ste. Marie. Joubin states the two structures, the Ranson and Canagau dikes, are of major regional importance as pitchblende carriers. Present workings on the Canagau dike consist of 10 pits spaced over 1,500-feet of length...Thorium Exploration and Gold, Ltd., and Camsell River Silver Mines, joint holders of a five-claim uranium prospect 95 miles northwest of Yellowknife, in an extensive radioactive zone along the Stevens fault, propose sinking a 100-foot shaft this Winter on their property. Pitchblende has been identified at several points along the fault...Bobjo and Bigdike Mines, each of which has a 37½% interest in the Mattawa uranium showing, have produced a product running 7.16% uranium oxide content. Table concentration plus magnetic separation were used to concentrate the radioactive minerals, mainly euxenite. It is hoped that Eldorado Mining (the Canadian Government purchasing agent) may agree to some modification of their requirement of 10% uranium oxide content... Radioactive material has been located in Burwash Twp., about 30 miles southeast of Sudbury, Ontario. A group of five developers are working the find together; they have staked twelve claims, and acquired mining rights on another 640 acres adjoining. Samples sent to the Ontario Department of Mines have assayed 0.42% and 0.14% uranium oxide equivalent.

AUSTRALIA- The Premier of South Australia, Mr. Playford, has introduced a Bill in the Legislative Assembly authorizing the State Government to start mining uranium ore at Radium Hill. Under the terms of the Bill, the Minister of Mines in the South Australian Government would also be empowered to treat and sell uranium ores.

ITALY- The Societa Acquedotto Defarrari Galliera have reported uranium minerals at Isoverde, north of the town of Chiavari, on the Golfo di Rapallo (Tigullio Gulf). The Societa made the find in the course of drilling for a new water supply in the locality, and have purchased extensive sites around the reported find. Geologists and engineers of the South African Rand Mining Company are investigating the reported discovery on behalf of British mining interests.

ROUMANIA- Investigations have been made of the radioactivity of five different hot mineral springs of Mangalia. Values ranging from 0.59 to 1.27 millimicrocuries were found, using an electroscope. No chemical analyses were made.

Sincerely,

The Staff
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